

Traditional and Pharmacological Relevance of *Cassia fistula*- Aragvadha in Chronic Wound Healing: An Evidence-Based Review

Cassia fistula in Chronic Wound Healing

¹Dr. Nayak Leena, ²Dr. Chandrakanth M Halli, ³Dr. Mahesh Raju B, ⁴Dr. Mamatha H.S, ⁵Dr. Roopesh M Ekalarkar, ⁶Dr. Md. Altaf

¹PhD Scholar, ²⁵⁶Professor, ³⁴Associate Professor

¹²Department of Shalya Tantra, ³⁶Department of Swasthavritta and Yoga, ⁴Department of Kaumara Bhritya, ⁵Department of Rasa Shastra and Bhaishajya Kalpana, ³⁴⁵⁶Sri Siddharameshwar Ayurvedic Medical College and Hospital, Naubad, Bidar, Karnataka, India.

¹N.K. Jabshetty Ayurvedic Medical College and PG Centre, Bidar, Karnataka, India.

¹leenanayak43@gmail.com, ²drchalli42@gmail.com, ³dr.b.maheshraj@gmail.com, ⁴dr.mammu@gmail.com

Abstract—

Ethnopharmacological relevance:

Cassia fistula Linn. (Āragvadha) is widely used in traditional systems of medicine, particularly Ayurveda, for the management of skin diseases, inflammation, and wounds. Chronic non-healing ulcers represent a major clinical challenge globally, highlighting the need for safe and effective plant-based therapeutic options.

Aim of the study:

To critically evaluate the traditional uses, phytochemistry, and pharmacological evidence of *Cassia fistula*, with special emphasis on its potential role in chronic wound healing.

Materials and methods:

A comprehensive literature review was conducted using classical Ayurvedic texts and electronic databases including PubMed and Google Scholar. Keywords such as “*Cassia fistula*,” “wound healing,” “antimicrobial,” “antioxidant,” and “ethnopharmacology” were used. Relevant peer-reviewed articles and classical references were included.

Results:

Cassia fistula exhibits significant antimicrobial, anti-inflammatory, antioxidant, and wound healing properties. Its bioactive constituents, including anthraquinones, flavonoids and tannins contribute to these effects. Traditional usage aligns with modern pharmacological findings, indicating its potential in managing chronic wounds.

Conclusion:

The available evidence supports the ethnopharmacological relevance of *Cassia fistula* in chronic wound

management. Further well-designed experimental and clinical studies are required to validate its therapeutic potential.

Index Terms—*Cassia fistula*, *Āragvadha*, Chronic wound, Ulcer healing, Ethnopharmacology, Ayurveda

I. Introduction

Chronic non-healing wounds are characterized by prolonged inflammation, persistent microbial colonization, oxidative stress, impaired angiogenesis, and delayed tissue remodeling¹. They are commonly associated with diabetes mellitus, venous insufficiency, pressure ulcers, neuropathy, trauma, and peripheral vascular disease². Such wounds significantly reduce quality of life and impose a substantial economic burden on healthcare systems.

Traditional systems of medicine have long utilized medicinal plants for wound care, particularly where multi-target therapeutic approaches are desirable. Among these, *Cassia fistula* Linn., commonly known as *Āragvadha*, has been extensively described in Ayurveda for disorders involving inflammation, skin diseases, and wounds³⁻⁵.

The growing burden of chronic wounds, together with concerns regarding antimicrobial resistance, treatment cost, and delayed healing, has renewed scientific interest in plant-derived therapeutics. Therefore, evaluating the traditional and pharmacological relevance of *Cassia fistula* in chronic wound healing is timely and clinically relevant.

II. AIM OF THE STUDY

To critically evaluate the traditional uses, phytochemistry, pharmacological evidence and wound healing relevance of *Cassia fistula*.

III. MATERIALS AND METHODS

A narrative review was performed using classical Ayurvedic literature including *Suśruta Saṃhitā*, *Caraka Saṃhitā*, and *Bhāvaprakāśa Nighaṇṭu*, together with modern scientific databases such as PubMed and Google Scholar³⁻⁵.

Search terms included:

- *Cassia fistula*
- *Aragvadha*

- wound healing
- chronic ulcer
- antimicrobial
- antioxidant
- ethnopharmacology

Relevant peer-reviewed English-language studies addressing phytochemistry, pharmacology, traditional use and wound healing were included.

IV. TRADITIONAL USES OF CASSIA FISTULA

In Ayurveda, *Āragvadha* is indicated in conditions such as:

- *Kuṣṭha* (skin disorders)
- *Vraṇa* (wounds)
- *Pitta vikāra* (Pitta-related disorders)
- Constipation requiring mild elimination
- Conditions requiring purification and healing³⁻⁵

Its classical actions include:

- Mild purgative (*Mṛdu Virecana*)
- Antimicrobial (*Krimighna*)
- Anti-dermatosis (*Kuṣṭhaghna*)
- Pitta-pacifying (*Pittahara*)
- Blood-purifying support (*Raktaśodhaka*)

V. PHYTOCHEMISTRY

Major phytoconstituents reported in *Cassia fistula* include⁶:

- Anthraquinones (rhein, emodin, chrysophanol)
- Flavonoids
- Tannins
- Glycosides
- Phenolic compounds
- Sugars and mucilage

These compounds may collectively contribute to antimicrobial, anti-inflammatory, antioxidant, and tissue-repair activities.

VI. PHARMACOLOGICAL ACTIVITIES

Modern studies have reported the following biological activities:

- **Antimicrobial activity** against selected bacterial and fungal pathogens⁷
- **Anti-inflammatory activity** through modulation of inflammatory mediators⁸
- **Antioxidant activity** by scavenging free radicals and reducing oxidative stress⁹
- **Laxative effect** associated with anthraquinone derivatives⁶
- **Wound healing potential** through promotion of contraction and tissue repair⁷⁻⁹

VII. RELEVANCE IN CHRONIC WOUND HEALING

Chronic wounds require control of infection, regulation of inflammation, protection from oxidative damage, and stimulation of tissue regeneration. *Cassia fistula* appears relevant to each of these therapeutic targets.

Mechanistic Relevance

Traditional Concept	Contemporary Relevance
<i>Krimighna</i>	Antimicrobial effect
<i>Pittahara</i>	Anti-inflammatory action
<i>Raktaśodhaka</i>	Improved tissue environment
<i>Mṛdu Virecana</i>	Systemic metabolic support
Healing support	Tissue repair and regeneration

Proposed Multi-Target Action

1. Reduces microbial burden in wounds
2. Modulates prolonged inflammation
3. Protects tissue from oxidative injury
4. Supports granulation and tissue remodeling
5. May provide systemic supportive benefits in selected patients

VIII. DISCUSSION

Chronic non-healing wounds are difficult to manage because they involve multiple pathological processes simultaneously, including infection, persistent inflammation, oxidative stress, vascular compromise, and defective cellular repair². Conventional therapies may address one or more of these factors effectively; however, treatment failure and recurrence remain common.

The ethnopharmacological relevance of *Cassia fistula* lies in its long-standing traditional use for skin and wound disorders, now increasingly supported by modern pharmacological findings. Its antimicrobial activity may help reduce wound bioburden, while anti-inflammatory effects may attenuate prolonged inflammatory responses that delay healing. Antioxidant activity may further enhance cellular recovery and tissue regeneration⁷⁻⁹.

An additional feature of Ayurvedic interpretation is the concept of internal purification and systemic correction. Although not directly equivalent to biomedical terminology, this may correspond to supportive strategies targeting metabolic and inflammatory contributors to chronic disease.

Taken together, the available evidence suggests that *Cassia fistula* is a promising multi-target botanical candidate for integrative chronic wound care. However, robust clinical trials, standardized formulations, and dose-optimization studies are required before routine evidence-based adoption.

IX. LIMITATIONS

This review is limited by the scarcity of high-quality clinical trials specifically evaluating *Cassia fistula* in chronic non-healing wounds. Much of the available evidence is preclinical or based on traditional use.

X. FUTURE PERSPECTIVES

- Standardization of extracts and phytochemical profiling
- Development of topical gels, dressings, and wound formulations
- Controlled clinical trials in chronic wound patients
- Comparative studies with standard wound care
- Mechanistic studies on biofilm disruption, angiogenesis, and tissue regeneration

XI. CONCLUSION

Cassia fistula Linn. possesses significant traditional and pharmacological relevance in chronic wound healing. Its antimicrobial, anti-inflammatory, antioxidant, and tissue-supportive effects provide a rational basis for further translational and clinical research. With appropriate scientific validation, it may emerge as a valuable adjunct in integrative wound management.

GRAPHICAL ABSTRACT CAPTION

Multi-target therapeutic relevance of *Cassia fistula* in chronic wounds showing antimicrobial action, modulation of inflammation, antioxidant protection, tissue repair support and potential systemic benefits.

References

- [1] Frykberg RG, Banks J. Challenges in the treatment of chronic wounds. *Adv Wound Care (New Rochelle)*. 2015;4(9):560-582.
- [2] Sen CK. Human wounds and its burden: updated 2020 compendium of estimates. *Wound Repair Regen*. 2009;17(6):763-771.
- [3] Sharma PV. *Suśruta Saṃhitā*. Varanasi: Chaukhambha Vishvabharati; 2010.
- [4] Sharma RK, Dash B. *Caraka Saṃhitā*. Varanasi: Chaukhambha Sanskrit Series Office; 2014.
- [5] Chunekar KC, Pandey GS. *Bhāvaprakāśa Nighaṇṭu*. Varanasi: Chaukhambha Bharati Academy; 2015.
- [6] Kirtikar KR, Basu BD. *Indian Medicinal Plants*. 2nd ed. Dehradun: International Book Distributors; 2006.
- [7] Duraipandiyar V, Ignacimuthu S. Antimicrobial activity of some ethnomedicinal plants used by Paliyar tribe from Tamil Nadu, India. *BMC Complement Altern Med*. 2009;9:35.
- [8] Yadav RN, Jain M. Phytochemical screening and anti-inflammatory activity of *Cassia fistula* Linn. bark extracts. *Int J Pharm Sci Res*. 2011;2(5):1321-1326.
- [9] Luximon-Ramma A, Bahorun T, Crozier A. Antioxidant actions and phenolic composition of selected medicinal plants including *Cassia fistula*. *Food Chem*. 2002;80(4):489-496